

REMARKS

Claim Objections

Claim 1 was objected and the Examiner states that the word “combing” is misspelled. Actually, in claims 1 and 24 as well as in the Remarks of the Amendment filed May 24, 2007, the phrase “molecular combining” was inadvertently written as “molecular combining” at some occurrences. Claims 1 and 24 have been amended to fix the typographical error.

Claim Rejection - 35 U.S.C. §103

Claims 1-2, 4-6, 12-13, 24-26 and 28-30 were rejected as being obvious over Kley in view of Kondo. This rejection is respectfully traversed.

Applicants respectfully submit that neither Kley nor Kondo fail to disclose “aligning a biomolecule in a parallel manner on a surface by molecular combining; ... wherein the molecular combining comprises attachment of the biomolecules to the surface and alignment of the biomolecules” recited in claims 1 and 24. The Examiner has acknowledged that Kley does not disclose “a biomolecule and aligning a biomolecule in a parallel manner on a surface.” See page 3, lines 5-6 from the bottom of the Action. The Examiner tries to fill this gap using Kondo. Applicants respectfully submit that while Kondo fails to teach “molecular combining; ... wherein the molecular combining comprises attachment of the biomolecules to the surface and alignment of the biomolecules” recited in claims 1 and 24. .

The Examiner states that Kondo teaches “wherein the molecular combining comprises attachment of the biomolecule to a surface (connections with peripheral surface) (page 5, column 1, [0058-0059]) and alignment of the biomolecule (abstract, second paragraph; page 3, column 1, [0026]; and page 4, column 1, [0042]).” See page 3, line 4 from the bottom, to page 4, line 2 of the Action. For the benefit of the Judges on the Board of Appeal, in case this application goes up on appeal, Applicants cite each and every portion of Kondo relied upon by the Examiner to allege that Kondo teaches molecular combining wherein molecular comprises attachment of the biomolecules

to the surface and alignment of the biomolecules to prove that there is *no factual basis for the Examiner's allegation*.

As explained above, the Examiner states, Kondo teaches “wherein the molecular combining comprises attachment of the biomolecule to a surface (connections with peripheral surface) (page 5, column 1, [0058-0059]).”

Page 5, column 1, paragraph [0058-0059], of Kondo states:

[0058] FIG. 10 is a sectional view showing, on an enlarged basis, an essential portion of a DNA detector which is applied to a fifth embodiment of the present invention and in which a plurality of narrow tubes are arranged in an axial direction of the tubes on an outer peripheral surface of a tubular heat block and a stationary-phase DNA probe is filled in each tube.

[0059] FIG. 11 is an explanatory view showing an application example of FIG. 10, in which the narrow tube is spirally wound around the outer peripheral surface of the tubular heat block.

Where does the above cited statements from Kondo teach “wherein the molecular combining comprises attachment of the biomolecule to a surface?” Nowhere!

As explained above, the Examiner states, Kondo teaches “alignment of the biomolecule (abstract, second paragraph; page 3, column 1, [0026]; and page 4, column 1, [0042]).”

Abstract, second paragraph of Kondo states:

It relates to a gene analysis method comprising the steps of extracting a target nucleic acid from a biological sample (23) and amplifying a target DNA, thereafter, introducing a reaction eluent (L) containing a predetermined DNA into a stationary-phase DNA probe (53) having a predetermined temperature and arranged in series or in parallel and separating a DNA complementary to the stationary-phase DNA probe (53).

Page 3, column 1, paragraph [0026] of Kondo states:

[0026] The present invention provides a gene analysis method comprising the steps of extracting a target nucleic acid from a biological sample and amplifying a target DNA, thereafter, introducing a reaction eluent containing a predetermined DNA into a stationary-phase DNA probe having a predetermined temperature and arranged in series or in parallel and separating a DNA complementary to the stationary-phase DNA probe, characterized in that the gene analysis method comprises a plurality of stationary-phase DNA probes at least a part of which can be set to a temperature for forming a double strand of a DNA to be tested and a reaction eluent containing the same or different kinds of DNA after being amplified is introduced into the stationary-phase DNA probes. Accordingly, detection of various kinds of DNA can be conducted rapidly and with precision, analysis of a plurality of genes can be made simultaneously from different kinds of samples, and a double strand forming position of the DNA to be tested can be detected rapidly.

Page 4, column 1, paragraph [0042] of Kondo states:

[0042] According to the present invention, a plurality of the same or different stationary-phase DNA probes are received in a plurality of columns which are arranged in parallel with each other and fluid resistance means having a larger fluid resistance than that of the column portions is disposed at each supply passageway of an eluent which is in communication with each of the columns. By reducing the flow rate of each feed passage of the eluent, the flow rate of the column part can be restrained from being varied. Thus, the parallel connection of the plural columns, the parallel treatment of the DNA detection thereof and supply of the eluent by only one feed eluent pump can be realized. In addition, the device of this type can be made compact in size and light in weight.

Where do these cited statements from Kondo teach alignment of the attached biomolecule? Nowhere!

Applicants respectfully submit that as there is *no factual basis* for the Examiner's allegation that Kondo teaches molecular combining, "wherein the molecular structures are biomolecules and the molecular combining comprises attachment of the biomolecules to the surface and alignment of the attached biomolecules" as recited in claims 1 and 24, the pending obviousness

rejection should be withdrawn as the combination of Kley and Kondo would not lead a person of ordinary skill in the art to arrive at the claimed invention.

The Examiner has stated that persons of ordinary skill in the art would have been motivated to combine Kley and Kondo because “[m]odifying Kley according to Kondo would be able to align biomolecule in parallel so that the detection of biomolecule (DNA) can be conducted rapidly and with precision (page 3, column 1, [0026]).” See page 4, lines 2-4 of the Action. Applicants respectfully disagree. The Examiner has acknowledged that Kley fails to disclose “a biomolecule and aligning a biomolecule in a parallel manner on a surface.” See page 3, lines 5 and 6 from the bottom of the Action. Kley relates to a scanning probe microscopy of inorganic materials such as semiconductors, not of any long molecules such as biomolecules. Thus, there is no suggestion in Kley to modify the method of Kley to include aligning a biomolecule in a parallel manner on a surface by molecular combing “wherein the molecular structures are biomolecules and the molecular combing comprises attachment of the biomolecules to the surface and alignment of the attached biomolecules” as recited in claims 1 and 24. On the other hand, Kondo relates to gene analysis wherein “a stationary-phase DNA probe having a predetermined temperature ... [is] arranged in series or parallel” (page 3, first column, paragraph [0026] of Kondo) and “the stationary-phase DNA probes are increased and decreased in temperature for each analysis of the DNA to be tested” (page 3, first column, paragraph [0027] of Kondo). There is *nothing* in Kondo that suggests the use of a scanning probe microscopy. Thus, there is no suggestion in either Kley or Kondo to modify the method of Kley according to Kondo.

Claims 8-11 were rejected as being obvious over Kley in view of Kondo, as applied to claim 1, further in view of Grand. This rejection is respectfully traversed.

Claims 8-11 depend directly or indirectly from claim 1. Grand does not fill the gaps in Kley and Kondo. Thus, claims 8-11 should also be allowable as claim 1 should now be allowable.

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